

**CLOSURE ESPECIALLY FOR RECEIVING OR CLAMPING A FOLDED PART OF A BAG**

Publication number: WO0007896

Publication date: 2000-02-17

Inventor: SCHOEREN HUBERTUS JOHANNES BER (NL)

Applicant: SCHOEREN HUBERTUS JOHANNES BER (NL)

**Classification:**

- International: B65D33/16; B65D33/17; B65D33/18; (IPC1-7):  
B65D33/16

- European: B65D33/16D; B65D33/16D1

Application number: WO19991B01377 19990803

Priority number(s): NL19981009802 19980805

Also published as:

 NL1006802C (C1)

Cited documents:

 GB2270345

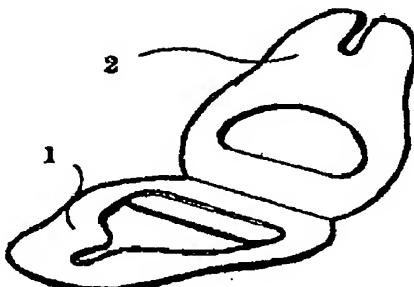
 US5311848

 US3822441

[Report a data error here](#)

**Abstract of WO0007896**

Closure made of plate material comprising a first closing part (1) provided with an opening (1a) cut through the material of the closure. The closure comprises a second closing part (2) movable with respect to the first closing part (1), whereby an edge part (3a) of the opening (1a) of the first closing part (1) in co-operation with an edge part (3b) of the second closing part (2) may enclose a hole (3). The closure further comprises connection means (4, 5 or 6) for the transferral of force between the two said closing parts (1 and 2).



Data supplied from the esp@cenet database - Worldwide

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

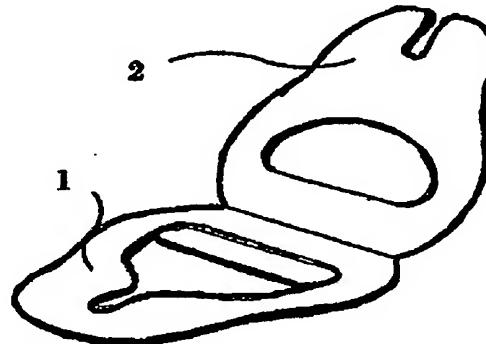
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 : <b>B65D 33/16</b>		A1	(11) International Publication Number: <b>WO 00/07896</b> (43) International Publication Date: 17 February 2000 (17.02.00)
<b>(21) International Application Number:</b> PCT/IB99/01377 <b>(22) International Filing Date:</b> 3 August 1999 (03.08.99) <b>(30) Priority Data:</b> 1009802 5 August 1998 (05.08.98) NL		<b>(81) Designated States:</b> CA, JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE). <b>Published</b> <i>With international search report.            Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments.            In English translation (filed in Dutch).</i>	
<b>(71)/(72) Applicant and Inventor:</b> SCHOEREN, Hubertus, Johannes, Bernardus [NL/NL]; Sieggeplantsoen 26, NL-6835 AJ Arnhem (NL).			

(54) Title: CLOSURE ESPECIALLY FOR RECEIVING OR CLAMPING A FOLDED PART OF A BAG

## (57) Abstract

Closure made of plate material comprising a first closing part (1) provided with an opening (1a) cut through the material of the closure. The closure comprises a second closing part (2) movable with respect to the first closing part (1), whereby an edge part (3a) of the opening (1a) of the first closing part (1) in co-operation with an edge part (3b) of the second closing part (2) may enclose a hole (3). The closure further comprises connection means (4, 5 or 6) for the transferral of force between the two said closing parts (1 and 2).



***FOR THE PURPOSES OF INFORMATION ONLY***

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TC	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

WO 00/07896

PCT/IB99/01377

1

**CLOSURE ESPECIALLY FOR RECEIVING OR CLAMPING A FOLDED PART OF A BAG**

The invention is related to a closure made of plate material according to preamble of claim 1. Such a closure is known from the United States patent publication US-A-5 3.822.441 and is suited for closing and/or clamping of objects made of a flexible material, such as bags made of plastic and/or bath towels and the like. In the known closure a recess cut through the plate material of the closure consists of three parts, which are characterised by their shape. The first part of the recess starts from the edge of the closure and has an inwardly converging shape. The second part of the recess is a relatively narrow passage, which connects to the narrow side of the first part of the recess. The narrow passage ends in the third part of the recess, which consists of an opening the edges of which are provided with number sharp protrusions. When the first part of the recess of the closure is pushed against a folded part of the object to be closed and/or clamped, the said folded part will be guided to the narrow passage, whereby the said folded part is folded together further. Subsequently the said folded part can be brought through the narrow passage to the third part of the recess, where by the plate material of the closure somewhat deforms elastically. The edges of the opening then clamp the said folded part, there by aided by the sharp protrusions. Because the closure prohibits the tendency to fold out of the said folded part of the object to be closed and/or clamped, the said object is closed and/or clamped.

Although the known closure functions well in itself, a number of disadvantages are connected to the known closure. After the known closure is attached to an object it is not well possible to remove it again. Moreover the material from which the known closure is composed is a somewhat elastically deformable. Such materials are relatively expensive and are very poorly biologically degradable. Furthermore the known closure can not be reused easily for carrying objects. During the carrying of an object at the closed end of the closure, gravity works in the direction of said recess, so that under the influence of its weight the said object will slide out of the closure or will be damaged by the said sharp protrusions.

The invention aims at overcoming the afore said disadvantages. To this end the closure is defined according to the characterising portion of claim 1. According to the invention the closure comprises to mutually moveable closing parts. A first closing part is provided with an opening cut through the material of the closure for receiving a folded part

WO 00/07896

PCT/IB99/01377

2

of an object to be closed and/or clamped. The closure further comprises a second closing part, which is movable with respect to the first closing part. The second closing part may thereby be placed in to such a position with respect to the first closing part that this closing part in co-operation with the first closing part encloses a hole, which coincides with a part of the opening of the first closing part. In the said position the freedom of movement of the said folded part is restricted to the hole enclosed by the two closing parts and the closure is in the closed state. The size of the hole is tuned such to the volume of the said folded part that this is clamped with a certain clamping force. Connection means are present for the transferral of force between the two closing parts. In general the said force is a reaction force due to the clamping force which the two closing parts exert on an object to be closed and/or clamped.

The closure according to the invention may be used repeatedly without damaging the closure or the object to be closed and/or clamped. Moreover, besides plastic the closure according to the invention may be made of the durable and biologically well degradable cardboard without compromising the functionality of the closure. A additional advantage of the closure according to the invention is that this may simply be provided with a handle or hook by the introduction of at least one further opening cut through the material of the closure. Such a handle may be introduced in the material of the closure such that during the carrying of an object the gravitational force works in the direction of an edge part of the opening of the first closing part. In such a case it is prevented that the closures opens because of the weight of the said object. Moreover, the clamping force between the closure and the said object will even increase during the carrying of an object. During the carrying of an object by means of the closure, the closure is usually held vertically in line with the arm. Because the closure is attached to an object to be closed and/or clamped while held approximately vertically at an angle of approximately 90°, the said object would assume a horizontal position. Under the influence of the force of gravity the said object usually will try to assume a vertical position, so that the said object tilts in relation to the closure. As a result of the tilting the object exerts a force moment on the closure, which moment advantageously contributes to the clamping of the said object.

According to an elaboration of the closure according to the invention the connection means comprise an at least in the closed state of the closure raised edge, that is provided on one of the two closing parts. If the said raised edge is provided on the first closing part, this

WO 00/07896

PCT/IB99/01377

3

raised edge needs to be provided such that in the said position the second closing part is enclosed between the said raised edge and the said folded part. According to a further elaboration of the invention the first closing part to this end is composed of two essentially mutually mirror image like made parts that are connected to each other by means of at least one folding line. Before use of the closure the said two parts of the first closing part are folded-over along the folding line, whereby a part of the material of the first closing part near the folding line forms the raised edge.

According to an alternative elaboration of the closure according to the invention the connection means comprise a folding line. The first closing part may then rotate with respect to the second closing part along an axis formed by the folding line and be brought into the said position. According to yet another elaboration of the closure according to the invention the connection means comprise a shaft oriented substantially perpendicular to the said two closing parts. The first closing part may then be brought into the said position rotating with respect to the second closing part along the said shaft. The said shaft is for example composed of a cotter pin.

A more detailed elaboration of the closure according to the invention is provided by the characterising portion of claim 6. Because before the closing of the closure the closing parts are brought into a substantially parallel orientation with respect to each other, the closure is relatively flat in the closed state and has a laminated structure, whereby the closing parts mutually support each other. The mentioned features of the closure contribute to the stiffness, the strength and the ease of use of the closure. In the closed state of the closure the second closing part covers a part of the opening of the first closing part. Because of this the said opening may be made relatively large, so that the opened state of the closure the said folded part of an object to be closed and/or clamped may be guided through the opening easily. If the said opening converges in the direction of the said edge part, the said folded part is compressed when this is moved in the direction of the said edge part before the closing of the closure.

Preferably, the hole enclosed by the two closing parts is essentially circularly shaped in the closed state of the closure. In such a case the said folded part of the object to be closed and/or clamped is enclosed and clamped by the two closing parts evenly. To this end edge parts of the first closing part and of the second closing part, that enclose the said hole in the closed state of the closure, are curved with an essentially constant radius of

WO 00/07896

PCT/IB99/01377

4

curvature. According to a more detailed elaboration of the closure according to the invention the said edge parts are provided with one or more sharp protrusions. In the closed state of the closure the sharp protrusions are in touching with the said folded part, so that the clamping of this folded part is at an optimum.

5 Although in the above the bringing into contact of a folded part of an object to closed and/or clamped is discussed, it was found that the closure according to the invention may also be adopted for the clamping and if the closure is provided with a handle subsequently carrying of inflexible objects such as glass or plastic bottles. In such a case the flexibility of the material of the closure is sufficient for exerting an indeed small clamping force on the 10 object to be clamped. During the carrying of the object it will tilt with respect to the closure, as is discussed in the above. Because of the tilting the said object exerts a push force on the closure, which contributes to the clamping of the object in the closure.

15 In the below a number of elaborations of the closure according to the invention are discussed with reference to the figures. In the figures de solid lines denote the edges of and the cuts in the plate material of the closure. De dash-dotted lines denote the folding lines and the dashed lines denote the cuts, edges and folding lines that are located under an on top lying closing part. The arrows that are shown in a number of the figures denote the direction in which the second closing part is moved with respect to the first closing part for the closing of the closure.

20 Figure 1a is an opened closure according to the invention provided with a folding line.

Figure 1b is the closure according to figure 1a in the closed state.

Figure 1c is de opened closure of figure 1a seen at a different angle

25 Figure 1d is the closed closure of figure 1b attached at the location of a folded part of a bag made of a flexible material.

Figure 2a is an opened closure according to the invention provided with a raised edge.

Figure 2b is the closure of figure 2a in the closed state.

Figure 3a is an opened closure according to the invention provided with a shaft.

30 Figure 3b is the closure of figure 3a in the closed state.

Figure 4a is an opened closure according to the invention provided with a folding line and with connection means.

WO 00/07896

PCT/IB99/01377

5

Figure 4b is the closure of figure 4a in the closed state.

Figure 5a is a closure according to the invention wherein plate material is made use of efficiently.

Figure 5b is the closure of figure 5a in the closed state.

5 Figure 6a is an opened closure according to the invention provided with double fitted second closing part.

Figure 6b is yet another opened closure according to the invention provided with a double fitted second closing part.

Figure 7 is the opened closure of figure 1a provided with sharp protrusions.

10 Figure 8 is an opened closure according to the invention with a deviating design.

The figure 1a shows an opened closure according to the invention comprising a first closing part 1 provided with an converging opening 1a cut through the plate material of the closure and a second closing part 2 provided with a further opening 2a cut through the plate material of the closure, which serves as a handle in the closed state of the closure. The two closing parts 1 and 2 are movably connected to each other by means of connection means 4, 5, or 6 executed as a folding line 5. The edge arts 3a of the first closing part 1 and 3b of the second closing part 2, which in the closed state of the closure enclose a hole 3, are curved with a substantially constant radius of curvature. Part 10 of the first closing part 1 is parted from the rest of the material of the first closing part 1 by means of a folding line and serves as reinforcement in the closed state of the closure. Part 10 is not in all cases essential to the correct functioning of the closure.

20 In figure 1b the closure of figure 1a is shown in the closed state. In the closed state the closing parts 1 and 2 are folded against each other, whereby the two closing parts 1 and 2 largely coincide and in co-operation with each other enclose a hole 3. As is shown in figure 1b, in the closed state of the closure the further opening 2a in co-operation with the opening 1a of the first closing part 1 forms a further hole, that may for example be utilised as a handle. The part 10 of the first closing part 1, which is attached to the first closing part 1 by means of a folding line, may be folded around the second closing part 2 in the closed state of the closure for the strengthening of the plate material about the handle.

25 30 In figure 1c the closure of figure 1a is shown in a half closed state. In figure 1d the closure figure 1a is shown, adopted for the closing of a bag 8 of flexible material. The closing of such a bag 8 with the aid of the closure according to the invention may be

WO 00/07896

PCT/IB99/01377

6

performed in four steps. In a first step the upper side of the bag 8 is folded together, for example by rotating said upper side a number of times with respect to the lower side of the bag 8. In a second step the folded upper side of the bag 8 is brought through the opening 1a of the first closing part 1. In a third step the first closing part is moved with respect to the bag 8 such that a part of the said upper side is pushed against the edge part 3a. Although not essential for the functioning of the closure, it may be evident that the converging shape of the opening 1a has the advantage that the upper side may be brought into the opening 1a easily and that during the moving of the said upper side in the direction of the edge part 3a it is compressed and clamped into the narrow part of the opening 1a. Finally, in the fourth step the second closing part 2 is folded over the first closing part 1 with the aid of the folding line 5, so that also the edge part 3b starts to push against the said folded part of the upper side of the bag 8. In the closed state of the closure a part of the upper side of the bag 8 is in this manner clamped by the hole 3 enclosed by the edge parts 3a and 3b. The lower side of the bag 8 is then closed of by the closure. It will be clear that the size of the hole 3 must be tuned to the side of the bag 8 to obtain the right amount of clamping force on the folded upper side.

The figure 2a shows an opened closure according to the invention comprising a first closing part 1 provided with an opening 1a cut through the plate material of the closure and with a second closing part. The first closing part 1 consists of two mutually mirror image like made parts that are connected to each other by means of a pair of folding lines 5. At least in the closed state of the closure the material in between the folding lines 5 forms a raised edge 4. Before use of the closure the two said parts of the first closing part 1 are folded-over along the folding line 5. After the folded part of an object to be closed and/or clamped is brought into the opening 1a, the second closing part 2 slides in-between the two said part of the first closing part 1, whereby the second closing part 2 abuts the said raised edge 4. After the second closing part is attached, the two closing parts 1 and 2 enclose and hole 3, as is shown in figure 2b.

The figure 3a shows an opened closure according to the invention comprising a first closing part 1 provided with an opening 1a cut through the plate material of the closure and with a second closing part 2. The two closing parts 1 and 2 are rotatably connected to each other by means of a shaft 6. In figure 3b the closure is shown in the closed state, wherein the closing parts 1 and 2 in co-operation with each other enclose a hole 3. In the elaboration

07/11 2007 16:25 FAX +31 20 6750400

M.W.Driessen NL

011

WO 00/07896

PCT/IB99/01377

7

of the closure according to the invention shown in the figures 3a and 3b the part 10  
prevents the rotation of the closing part 2 in the direction wherein the closure opens.

PAGE 11/11 \* RCVD AT 11/7/2007 10:04:44 AM [Eastern Standard Time] \* SVR:USPTO-EFXRF-1/19 \* DNIS:2733201 \* CSID:+31 20 6750400 \* DURATION (mm:ss):32-12

Fax 0015712733201  
2007-11-07 ±

Under the Paperwork Reduction Act of 1995, no persons are required to respond to a collection of information unless it contains a valid OMB control number.

PTO/SB/08A (08-08)  
Approved for use through 03/31/2007. OMB 0651-0031

Approved for use through 03/31/2007. OMB 0651-0031  
U.S. Patent and Trademark Office: U.S. DEPARTMENT OF COMMERCE

Substitute for form 1449/PTO		Complete If Known	
<b>INFORMATION DISCLOSURE STATEMENT BY APPLICANT</b> <i>(Use as many sheets as necessary)</i>		Application Number	US 10599743
		Filing Date	October 6,2006
		First Named Inventor	Maarten Willem DRIESSEN
		Art Unit	
		Examiner Name	
		Attorney Docket Number	
Sheet	1	of	1

## **INFORMATION DISCLOSURE STATEMENT BY APPLICANT**

**(Use as many sheets as necessary)**

Sheet 1 of 1

**U. S. PATENT DOCUMENTS**

**FOREIGN PATENT DOCUMENTS**

FOREIGN PATENT DOCUMENTS					
Examiner Initials*	Cite No. <sup>1</sup>	Foreign Patent Document	Publication Date	Name of Patentee or Applicant of Cited Document	Pages, Columns, Lines, Where Relevant Passages Or Relevant Figures Appear
		Country Code <sup>2</sup> Number <sup>4</sup> Kind Code <sup>5</sup> (if known)	MM-DD-YYYY		T <sup>6</sup>
		WO 0007896	02-17-2000	SCHOEREN HUBERTUS JOHANNES BER	the whole document
		WO 03084633	10-16-2003	HAVELKA J MICHAEL	paragraphs [0019], [0024]; figures 3,5

**\*EXAMINER:** Initial if reference considered, whether or not citation is in conformance with MPEP 609. Draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant. <sup>1</sup>Applicant's unique citation designation number (optional). <sup>2</sup>See Kinds Codes of USPTO Patent Documents at [www.uspto.gov](http://www.uspto.gov) or MPEP 901.04. <sup>3</sup>Enter Office that issued the document, by the two-letter code (WIPO Standard ST.3). <sup>4</sup>For Japanese patent documents, the indication of the year of the reign of the Emperor must precede the serial number of the patent document. <sup>5</sup>Kind of document by the appropriate symbols as indicated on the document under WIPO Standard ST.16 if possible. <sup>6</sup>Applicant is to place a check mark here if English language Translation is attached.

This collection of information is required by 37 CFR 1.97 and 1.98. The information is required to obtain or retain a benefit by the public which is to file (and by the USPTO to process) an application. Confidentiality is governed by 35 U.S.C. 122 and 37 CFR 1.14. This collection is estimated to take 2 hours to complete, including gathering, preparing, and submitting the completed application form to the USPTO. Time will vary depending upon the individual case. Any comments on the amount of time you require to complete this form and/or suggestions for reducing this burden, should be sent to the Chief Information Officer, U.S. Patent and Trademark Office, P.O. Box 1450, Alexandria, VA 22313-1450. DO NOT SEND FEES OR COMPLETED FORMS TO THIS ADDRESS. SEND TO: Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

If you need assistance in completing the form, call 1-800-PTO-9199 (1-800-786-9199) and select option 2.

**CLOSURE ESPECIALLY FOR RECEIVING OR CLAMPING A FOLDED PART OF A BAG**

Publication number: WO0007896

Publication date: 2000-02-17

Inventor: SCHOEREN HUBERTUS JOHANNES BER (NL)

Applicant: SCHOEREN HUBERTUS JOHANNES BER (NL)

**Classifications:**

- International: B65D33/16; B65D33/17; B65D33/16; (IPC1-7):  
B65D33/16

- European: B65D33/16D; B65D33/16D1

Application number: WO19991B01377 19990803

Priority number(s): NL19981008802 19980805

**Also published as:**

NL1009802C (C1)

**Cited documents:**

GB2270345

US5311846

US3822441

[Report a data error here](#)

**Abstract of WO0007896**

Closure made of plate material comprising a first closing part (1) provided with an opening (1a) cut through the material of the closure. The closure comprises a second closing part (2) movable with respect to the first closing part (1), whereby an edge part (3a) of the opening (1a) of the first closing part (1) in co-operation with an edge part (3b) of the second closing part (2) may enclose a hole (3). The closure further comprises connection means (4, 5 or 6) for the transferal of force between the two said closing parts (1 and 2).



Data supplied from the esp@cenet database - Worldwide

PCT

WORLD INTELLECTUAL PROPERTY ORGANIZATION  
International Bureau

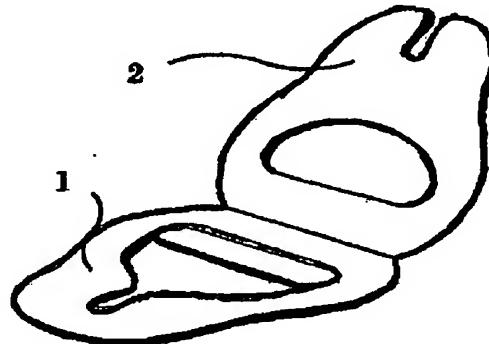
## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

(51) International Patent Classification 7 :  B65D 33/16	A1	(11) International Publication Number: <b>WO 00/07896</b>  (43) International Publication Date: 17 February 2000 (17.02.00)
(21) International Application Number: PCT/IB99/01377  (22) International Filing Date: 3 August 1999 (03.08.99)	(81) Designated States: CA, JP, US, European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE).	
(30) Priority Data: 1009802 5 August 1998 (05.08.98) NL  (71)(72) Applicant and Inventor: SCHOEREN, Hubertus, Johannes, Bernardus [NL/NL]; Sieggeplantsoen 26, NL-6835 AJ Arnhem (NL).	Published <i>With international search report. Before the expiration of the time limit for amending the claims and to be republished in the event of the receipt of amendments. In English translation (filed in Dutch).</i>	

(54) Title: CLOSURE ESPECIALLY FOR RECEIVING OR CLAMPING A FOLDED PART OF A BAG

## (57) Abstract

Closure made of plate material comprising a first closing part (1) provided with an opening (1a) cut through the material of the closure. The closure comprises a second closing part (2) movable with respect to the first closing part (1), whereby an edge part (3a) of the opening (1a) of the first closing part (1) in co-operation with an edge part (3b) of the second closing part (2) may enclose a hole (3). The closure further comprises connection means (4, 5 or 6) for the transferral of force between the two said closing parts (1 and 2).



***FOR THE PURPOSES OF INFORMATION ONLY***

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

AL	Albania	ES	Spain	LS	Lesotho	SI	Slovenia
AM	Armenia	FI	Finland	LT	Lithuania	SK	Slovakia
AT	Austria	FR	France	LU	Luxembourg	SN	Senegal
AU	Australia	GA	Gabon	LV	Latvia	SZ	Swaziland
AZ	Azerbaijan	GB	United Kingdom	MC	Monaco	TD	Chad
BA	Bosnia and Herzegovina	GE	Georgia	MD	Republic of Moldova	TG	Togo
BB	Barbados	GH	Ghana	MG	Madagascar	TJ	Tajikistan
BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NK	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakhstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LJ	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

WO 00/07896

PCT/IB99/01377

1

**CLOSURE ESPECIALLY FOR RECEIVING OR CLAMPING A FOLDED PART OF A BAG**

The invention is related to a closure made of plate material according to preamble of claim 1. Such a closure is known from the United States patent publication US-A-5 3.822.441 and is suited for closing and/or clamping of objects made of a flexible material, such as bags made of plastic and/or bath towels and the like. In the known closure a recess cut through the plate material of the closure consists of three parts, which are characterised by their shape. The first part of the recess starts from the edge of the closure and has an inwardly converging shape. The second part of the recess is a relatively narrow passage, which connects to the narrow side of the first part of the recess. The narrow passage ends in the third part of the recess, which consists of an opening the edges of which are provided with number sharp protrusions. When the first part of the recess of the closure is pushed against a folded part of the object to be closed and/or clamped, the said folded part will be guided to the narrow passage, whereby the said folded part is folded together further. Subsequently the said folded part can be brought through the narrow passage to the third part of the recess, where by the plate material of the closure somewhat deforms elastically. The edges of the opening then clamp the said folded part, there by aided by the sharp protrusions. Because the closure prohibits the tendency to fold out of the said folded part of the object to be closed and/or clamped, the said object is closed and/or clamped.

Although the known closure functions well in itself, a number of disadvantages are connected to the known closure. After the known closure is attached to an object it is not well possible to remove it again. Moreover the material from which the known closure is composed is a somewhat elastically deformable. Such materials are relatively expensive and are very poorly biologically degradable. Furthermore the known closure can not be reused easily for carrying objects. During the carrying of an object at the closed end of the closure, gravity works in the direction of said recess, so that under the influence of its weight the said object will slide out of the closure or will be damaged by the said sharp protrusions.

The invention aims at overcoming the afore said disadvantages. To this end the closure is defined according to the characterising portion of claim 1. According to the invention the closure comprises to mutually moveable closing parts. A first closing part is provided with an opening cut through the material of the closure for receiving a folded part

WO 00/07896

PCT/IB99/01377

2

of an object to be closed and/or clamped. The closure further comprises a second closing part, which is movable with respect to the first closing part. The second closing part may thereby be placed in to such a position with respect to the first closing part that this closing part in co-operation with the first closing part encloses a hole, which coincides with a part of the opening of the first closing part. In the said position the freedom of movement of the said folded part is restricted to the hole enclosed by the two closing parts and the closure is in the closed state. The size of the hole is tuned such to the volume of the said folded part that this is clamped with a certain clamping force. Connection means are present for the transferral of force between the two closing parts. In general the said force is a reaction force due to the clamping force which the two closing parts exert on an object to be closed and/or clamped.

The closure according to the invention may be used repeatedly without damaging the closure or the object to be closed and/or clamped. Moreover, besides plastic the closure according to the invention may be made of the durable and biologically well degradable cardboard without compromising the functionality of the closure. A additional advantage of the closure according to the invention is that this may simply be provided with a handle or hook by the introduction of at least one further opening cut through the material of the closure. Such a handle may be introduced in the material of the closure such that during the carrying of an object the gravitational force works in the direction of an edge part of the opening of the first closing part. In such a case it is prevented that the closures opens because of the weight of the said object. Moreover, the clamping force between the closure and the said object will even increase during the carrying of an object. During the carrying of an object by means of the closure, the closure is usually held vertically in line with the arm. Because the closure is attached to an object to be closed and/or clamped while held approximately vertically at an angle of approximately 90°, the said object would assume a horizontal position. Under the influence of the force of gravity the said object usually will try to assume a vertical position, so that the said object tilts in relation to the closure. As a result of the tilting the object exerts a force moment on the closure, which moment advantageously contributes to the clamping of the said object.

According to an elaboration of the closure according to the invention the connection means comprise an at least in the closed state of the closure raised edge, that is provided on one of the two closing parts. If the said raised edge is provided on the first closing part, this

WO 00/07896

PCT/IB99/01377

3

raised edge needs to be provided such that in the said position the second closing part is enclosed between the said raised edge and the said folded part. According to a further elaboration of the invention the first closing part to this end is composed of two essentially mutually mirror image like made parts that are connected to each other by means of at least one folding line. Before use of the closure the said two parts of the first closing part are folded-over along the folding line, whereby a part of the material of the first closing part near the folding line forms the raised edge.

According to an alternative elaboration of the closure according to the invention the connection means comprise a folding line. The first closing part may then rotate with respect to the second closing part along an axis formed by the folding line and be brought into the said position. According to yet another elaboration of the closure according to the invention the connection means comprise a shaft oriented substantially perpendicular to the said two closing parts. The first closing part may then be brought into the said position rotating with respect to the second closing part along the said shaft. The said shaft is for example composed of a cotter pin.

A more detailed elaboration of the closure according to the invention is provided by the characterising portion of claim 6. Because before the closing of the closure the closing parts are brought into a substantially parallel orientation with respect to each other, the closure is relatively flat in the closed state and has a laminated structure, whereby the closing parts mutually support each other. The mentioned features of the closure contribute to the stiffness, the strength and the ease of use of the closure. In the closed state of the closure the second closing part covers a part of the opening of the first closing part. Because of this the said opening may be made relatively large, so that the opened state of the closure the said folded part of an object to be closed and/or clamped may be guided through the opening easily. If the said opening converges in the direction of the said edge part, the said folded part is compressed when this is moved in the direction of the said edge part before the closing of the closure.

Preferably, the hole enclosed by the two closing parts is essentially circularly shaped in the closed state of the closure. In such a case the said folded part of the object to be closed and/or clamped is enclosed and clamped by the two closing parts evenly. To this end edge parts of the first closing part and of the second closing part, that enclose the said hole in the closed state of the closure, are curved with an essentially constant radius of

WO 00/07896

PCT/IB99/01377

4

curvature. According to a more detailed elaboration of the closure according to the invention the said edge parts are provided with one or more sharp protrusions. In the closed state of the closure the sharp protrusions are in touching with the said folded part, so that the clamping of this folded part is at an optimum.

5 Although in the above the bringing into contact of a folded part of an object to closed and/or clamped is discussed, it was found that the closure according to the invention may also be adopted for the clamping and if the closure is provided with a handle subsequently carrying of inflexible objects such as glass or plastic bottles. In such a case the flexibility of the material of the closure is sufficient for exerting an indeed small clamping force on the 10 object to be clamped. During the carrying of the object it will tilt with respect to the closure, as is discussed in the above. Because of the tilting the said object exerts a push force on the closure, which contributes to the clamping of the object in the closure.

In the below a number of elaborations of the closure according to the invention are discussed with reference to the figures. In the figures de solid lines denote the edges of and 15 the cuts in the plate material of the closure. De dash-dotted lines denote the folding lines and the dashed lines denote the cuts, edges and folding lines that are located under an on top lying closing part. The arrows that are shown in a number of the figures denote the direction in which the second closing part is moved with respect to the first closing part for the closing of the closure.

20 Figure 1a is an opened closure according to the invention provided with a folding line.

Figure 1b is the closure according to figure 1a in the closed state.

Figure 1c is de opened closure of figure 1a seen at a different angle

25 Figure 1d is the closed closure of figure 1b attached at the location of a folded part of a bag made of a flexible material.

Figure 2a is an opened closure according to the invention provided with a raised edge.

Figure 2b is the closure of figure 2a in the closed state.

Figure 3a is an opened closure according to the invention provided with a shaft.

30 Figure 3b is the closure of figure 3a in the closed state.

Figure 4a is an opened closure according to the invention provided with a folding line and with connection means.

WO 00/07896

PCT/IB99/01377

5

Figure 4b is the closure of figure 4a in the closed state.

Figure 5a is a closure according to the invention wherein plate material is made use of efficiently.

Figure 5b is the closure of figure 5a in the closed state.

5 Figure 6a is an opened closure according to the invention provided with double fitted second closing part.

Figure 6b is yet another opened closure according to the invention provided with a double fitted second closing part.

Figure 7 is the opened closure of figure 1a provided with sharp protrusions.

10 Figure 8 is an opened closure according to the invention with a deviating design.

The figure 1a shows an opened closure according to the invention comprising a first closing part 1 provided with an converging opening 1a cut through the plate material of the closure and a second closing part 2 provided with a further opening 2a cut through the plate material of the closure, which serves as a handle in the closed state of the closure. The two 15 closing parts 1 and 2 are movably connected to each other by means of connection means 4, 5, or 6 executed as a folding line 5. The edge arts 3a of the first closing part 1 and 3b of the second closing part 2, which in the closed state of the closure enclose a hole 3, are curved with a substantially constant radius of curvature. Part 10 of the first closing part 1 is parted from the rest of the material of the first closing part 1 by means of a folding line and 20 serves as reinforcement in the closed state of the closure. Part 10 is not in all cases essential to the correct functioning of the closure.

In figure 1b the closure of figure 1a is shown in the closed state. In the closed state the closing parts 1 and 2 are folded against each other, whereby the two closing parts 1 and 2 largely coincide and in co-operation with each other enclose a hole 3. As is shown in 25 figure 1b, in the closed state of the closure the further opening 2a in co-operation with the opening 1a of the first closing part 1 forms a further hole, that may for example be utilised as a handle. The part 10 of the first closing part 1, which is attached to the first closing part 1 by means of a folding line, may be folded around the second closing part 2 in the closed state of the closure for the strengthening of the plate material about the handle.

30 In figure 1c the closure of figure 1a is shown in a half closed state. In figure 1d the closure figure 1a is shown, adopted for the closing of a bag 8 of flexible material. The closing of such a bag 8 with the aid of the closure according to the invention may be

WO 00/07896

PCT/IB99/01377

6

performed in four steps. In a first step the upper side of the bag 8 is folded together, for example by rotating said upper side a number of times with respect to the lower side of the bag 8. In a second step the folded upper side of the bag 8 is brought through the opening 1a of the first closing part 1. In a third step the first closing part is moved with respect to the bag 8 such that a part of the said upper side is pushed against the edge part 3a. Although not essential for the functioning of the closure, it may be evident that the converging shape of the opening 1a has the advantage that the upper side may be brought into the opening 1a easily and that during the moving of the said upper side in the direction of the edge part 3a it is compressed and clamped into the narrow part of the opening 1a. Finally, in the fourth step the second closing part 2 is folded over the first closing part 1 with the aid of the folding line 5, so that also the edge part 3b starts to push against the said folded part of the upper side of the bag 8. In the closed state of the closure a part of the upper side of the bag 8 is in this manner clamped by the hole 3 enclosed by the edge parts 3a and 3b. The lower side of the bag 8 is then closed off by the closure. It will be clear that the size of the hole 3 must be tuned to the side of the bag 8 to obtain the right amount of clamping force on the folded upper side.

The figure 2a shows an opened closure according to the invention comprising a first closing part 1 provided with an opening 1a cut through the plate material of the closure and with a second closing part. The first closing part 1 consists of two mutually mirror image like made parts that are connected to each other by means of a pair of folding lines 5. At least in the closed state of the closure the material in between the folding lines 5 forms a raised edge 4. Before use of the closure the two said parts of the first closing part 1 are folded-over along the folding line 5. After the folded part of an object to be closed and/or clamped is brought into the opening 1a, the second closing part slides in-between the two said part of the first closing part 1, whereby the second closing part 2 abuts the said raised edge 4. After the second closing part is attached, the two closing parts 1 and 2 enclose and hole 3, as is shown in figure 2b.

The figure 3a shows an opened closure according to the invention comprising a first closing part 1 provided with an opening 1a cut through the plate material of the closure and with a second closing part 2. The two closing parts 1 and 2 are rotatably connected to each other by means of a shaft 6. In figure 3b the closure is shown in the closed state, wherein the closing parts 1 and 2 in co-operation with each other enclose a hole 3. In the elaboration

WO 00/07896

PCT/IB99/01377

7

of the closure according to the invention shown in the figures 3a and 3b the part 10 prevents the rotation of the closing part 2 in the direction wherein the closure opens.

The figure 4a shows an opened closure according to the invention comprising a first closing part 1, a second closing part 2 and clamping parts 1b and 2b for the fixing of the closing parts 1 and 2 with respect to each other. The first closing part 1 is provided with a clamping part 1b and the second closing part 2 is provided with a clamping part 2b. The two closing parts 1 and 2 are connected to each other by means of a folding line 5. In figure 4b the closure is shown in this closed state, wherein the two closing parts 1 and 2 are oriented mutually substantially parallel and enclose a hole 3. The clamping part 1b of the on top lying first closing part 1 is brought under the clamping part 2b of the under lying second closing part 2, so that the two closing parts 1 and 2 are fixed with respect to each other in the closed state of the closure.

The closure shown in figure 5a is advantageously made of a small amount of plate material. The closure comprises a first closing part 1, a second closing part 2 and a part 10, which parts 1, 2 and 10 are parted from each other by a number of folding lines 5 and cuts 9. In figure 5b the closure of figure 5a is shown in the closed state, wherein the closing parts 1 and 2 enclose a hole 3.

The closures shown in figure 6a and 6b comprise a first closing part 1 and a second closing part having two parts 11 and 12. The two parts 11 and 12 of the second closing part 2 are connected to either side of the first closing part 1. Such a closure has the advantage that the opening 1a of the first closing part 1 may be open to the outside, so that the attaching of the closure to an object to be closed and/or clamped may be performed easily. Moreover, the closure comprises three layers of plate material in the closed state, which comes to the advantages of the stiffness and strength of the closure.

In figure 7 the closure of figure 1a is shown, whereby the said edge parts 3a and 3b of the closing parts 1 and 2 are provided with sharp protrusions to optimally close and/or clamp an object to be closed and/or clamped.

Finally in figure 8 yet another elaboration of the closure according to the invention is shown having a second closing part having two parts 11 and 12. The closure of figure 8 has in the shown opened state a substantially rectangular shape so that this may advantageously be made of rectangular base material.

WO 00/07896

PCT/IB99/01377

8

## CLAIMS

1. Closure made of plate material comprising a first closing part (1) provided with an opening (1a) cut through the material of the closure, characterised in that, the closure comprises a second closing part (2) movable with respect to the first closing part (1), whereby an edge part (3a) of the opening (1a) of the first closing part (1) in co-operation with an edge part (3b) of the second closing part (2) can enclose a hole (3), and in that the closure further comprises connection means (4, 5 or 6) for the transferral of force between the two said closing parts (1 and 2).  
10
2. Closure according to claim 1, characterised in that, the closure is provided with at least one further opening cut through the material of the closure.
3. Closure according to claim 1 or 2, characterised in that, the connection means (4, 5 or 15 6) at least in the closed state comprise a raised edge (4).
4. Closure according to claim 1, 2 or 3, characterised in that, the connection means (4, 5 of 6) comprise a folding line (5).
- 20 5. Closure according to claim 1 or 2, characterised in that, the connection means (4, 5 or 6) comprise a shaft (6).
6. Closure according to claim 5, characterised in that, the shaft (6) is a folding line (5).
- 25 7. Closure according to any one of the preceding claims, characterised in that, the second closing part (2) may at least be brought into a substantially parallel orientation with respect to the first closing part (1), whereby the plate material of the second closing part (2) at least partly covers the recess (1a) of the first closing part (1).
- 30 8. Closure according to any one of the preceding claims, characterised in that, the opening (1a) of the first closing part (1) at least partly converges in the direction of the said hole (3).

WO 00/07896

PCT/IB99/01377

9

9. Closure according to any one of the preceding claims, characterised in that, the said edge part (3a) of the opening (1a) of the first closing part (1) is curved with an essentially constant radius of curvature.

5 10. Closure according to any one of the preceding claims, characterised in that, the said edge part (3b) of the said second closing part (2) is curved with an essentially constant radius of curvature.

10 11. Closure according to any one of the preceding claims, characterised in that, the said edge parts (3a and 3b) are provided with at least one sharp protrusion (7).

12. Closure according to any one of the preceding claims, characterised in that, the first closing part (1) and the second closing part (2) comprise a clamping part (respectively 1b and 2b), whereby the first closing part (1) can be brought into a substantially parallel orientation above the second closing part (2) and whereby the clamping part (1b) of the first closing part (1) may be positioned under the clamping part (2b) of the second closing part (2), for the fixing of the two closing parts (1 and 2) with respect to each other.

13. Closure according to any one of the preceding claims, characterised in that, the plate material is made of cardboard.

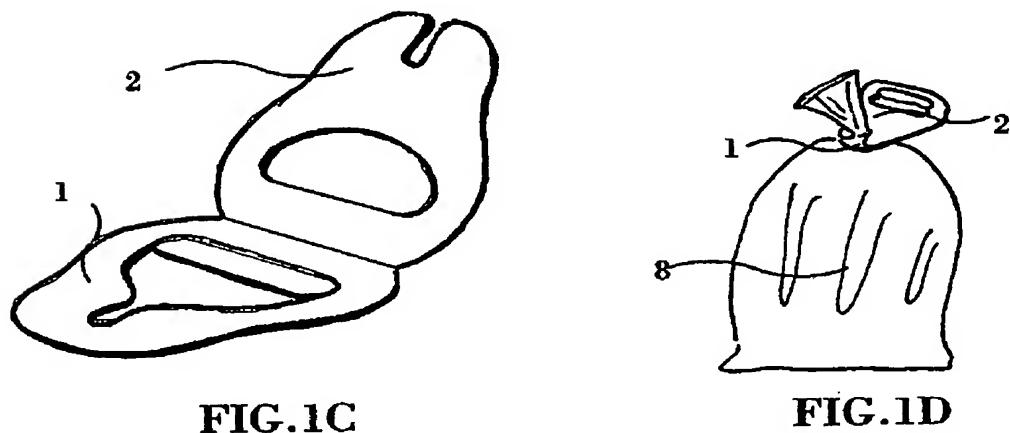
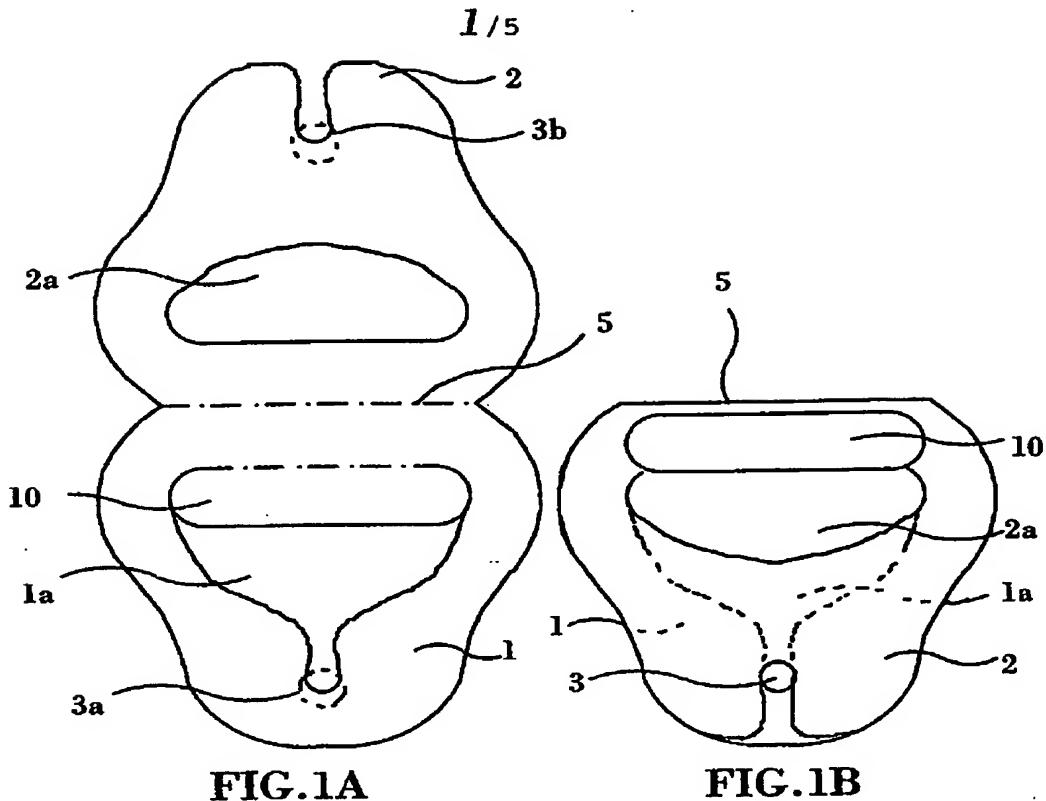
20 14. Closure according to any one of the preceding claims, characterised in that, the plate material is made of plastic.

25 15. Bag (8) or holder made of a flexible material and provided with a closure according to any one of the preceding claims.

30 16. Plate material at least provided with a hole (3), a folding line (5) and a cut (9), characterised in that, the plate material comprises a closure according to any one of the preceding claims.

WO 00/07896

PCT/IB99/01377



WO 00/07896

PCT/IB99/01377

2/5

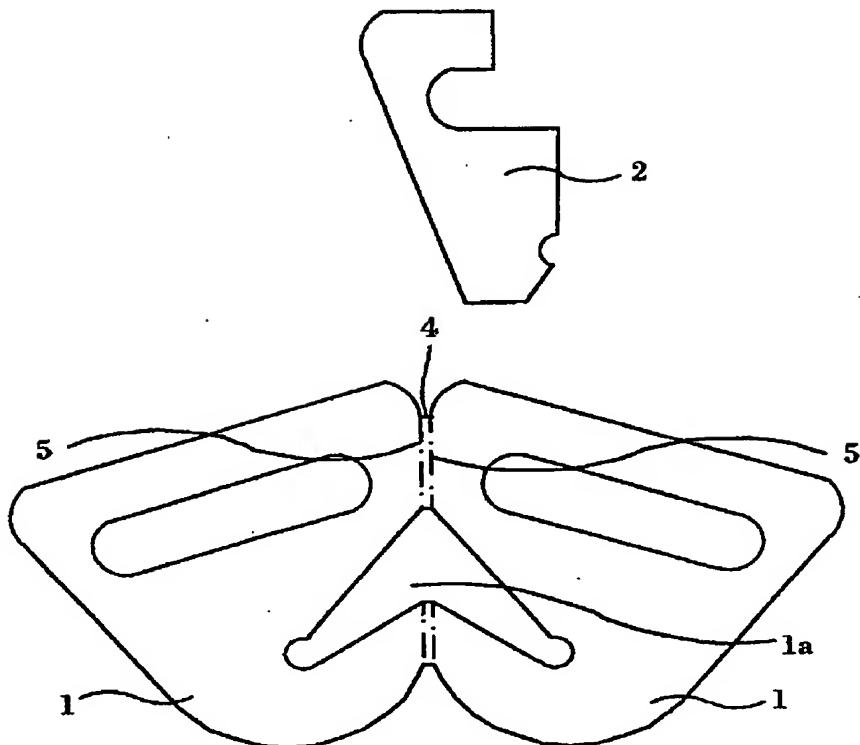


FIG. 2A

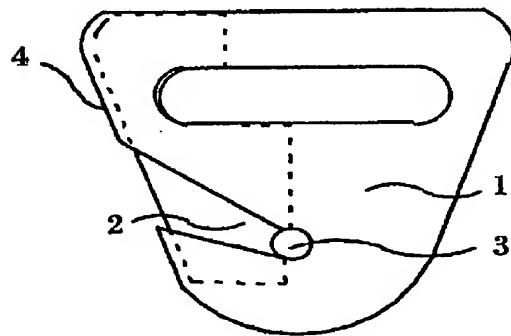


FIG. 2B

WO 00/07896

PCT/IB99/01377

3/5

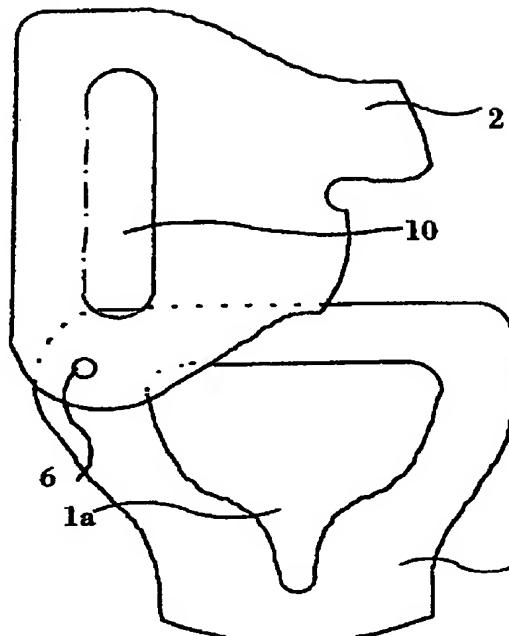


FIG. 3A

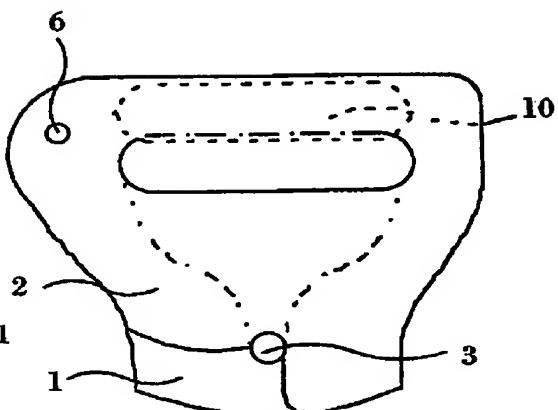


FIG. 3B

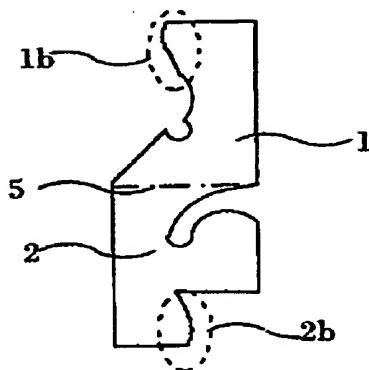


FIG. 4A

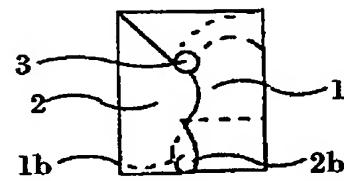


FIG. 4B

WO 00/07896

PCT/IB99/01377

4 / 5

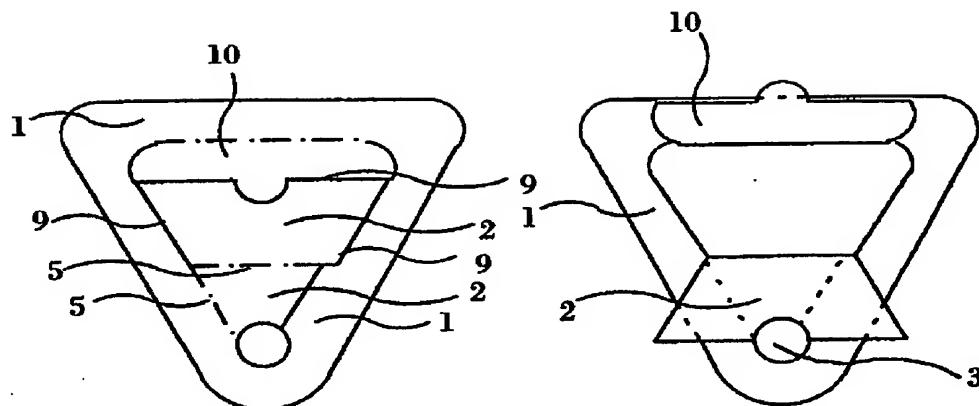


FIG. 5A

FIG. 5B

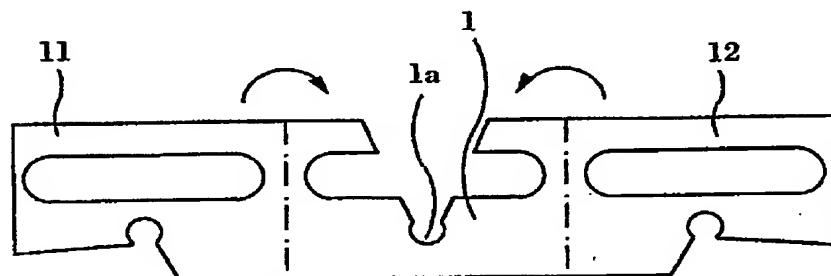


FIG. 6A

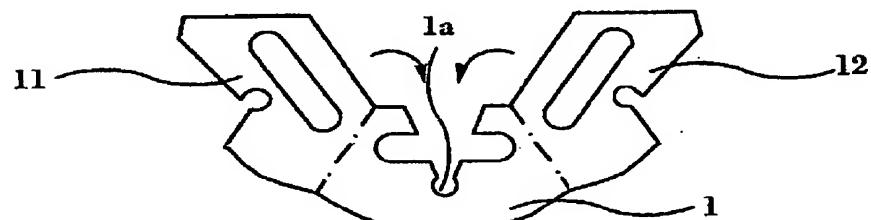


FIG. 6B

WO 00/07896

PCT/IB99/01377

5/5

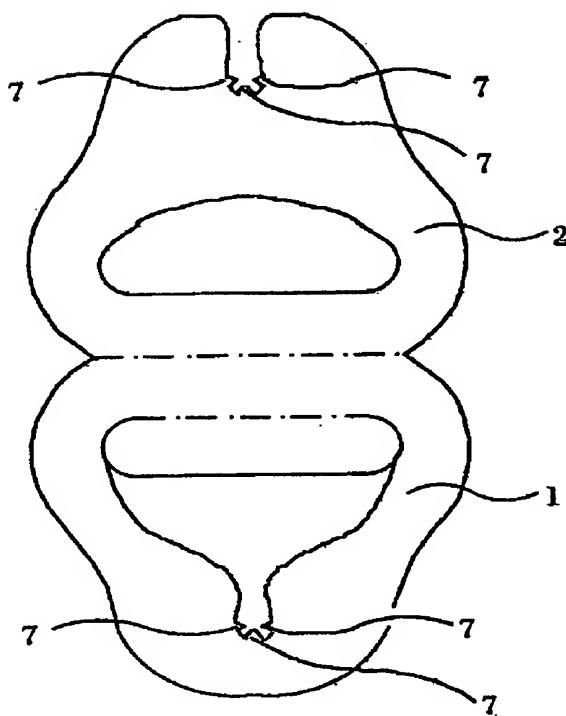


FIG. 7

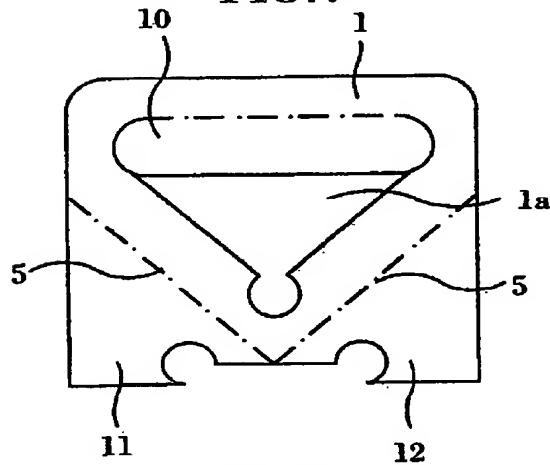


FIG. 8

## INTERNATIONAL SEARCH REPORT

Int'l	ional Application No
PCT/IB 99/01377	

A. CLASSIFICATION OF SUBJECT MATTER
IPC 7 B65D33/16

According to International Patent Classification (IPC) or to both national classification and IPC
---

B. FIELDS SEARCHED
--------------------

Minimum documentation searched (classification system followed by classification symbols)
IPC 7 B65D

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched
---

Electronic data base consulted during the International search (name of data base and, where practical, search terms used)
--

C. DOCUMENTS CONSIDERED TO BE RELEVANT
--

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	GB 2 270 345 A (MAX CO LTD) 9 March 1994 (1994-03-09) figures 1,2	1,15,16
A	US 5 311 646 A (EISCHEN) 17 May 1994 (1994-05-17) the whole document	1,15,16
A	US 3 822 441 A (PAXTON) 9 July 1974 (1974-07-09) cited in the application	

<input type="checkbox"/>	Further documents are listed in the continuation of box C.
--------------------------	--

<input checked="" type="checkbox"/>	Patent family members are listed in annex.
-------------------------------------	--

\* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubt on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

"X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone

"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"&" document member of the same patent family

Date of the actual completion of the international search	Date of mailing of the international search report
---	--

3 December 1999	13/12/1999
-----------------	------------

Name and mailing address of the ISA	Authorized officer
-------------------------------------	--------------------

European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 espn nl. Fax: (+31-70) 340-3016	Martens, L
--	------------

## INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No  
PCT/IB 99/01377

Patent document cited in search report	Publication date	Patent family member(s)		Publication date
GB 2270345	A 09-03-1994	JP 2684937 B		03-12-1997
		JP 6099954 A		12-04-1994
		DE 4330052 A		10-03-1994
		US 5495645 A		05-03-1996
US 5311646	A 17-05-1994	WO 9530602 A		16-11-1995
		AU 7016994 A		29-11-1995
		AU 682372 B		02-10-1997
		EP 0758995 A		26-02-1997
		JP 9504497 T		06-05-1997
US 3822441	A 09-07-1974	AT 313165 B		15-12-1973
		BE 768483 A		03-11-1971
		CA 938593 A		18-12-1973
		CH 531445 A		15-12-1972
		DE 2129937 A		19-10-1972
		DK 128311 B		08-04-1974
		FR 2148659 A		23-03-1973
		GB 1312037 A		04-04-1973
		JP 50027800 B		10-09-1975
		LU 63358 A		20-09-1971
		NL 7108302 A		09-10-1972
		NO 134327 B		14-06-1976
		PH 9495 A		08-01-1976
		ZA 7104000 A		23-02-1972